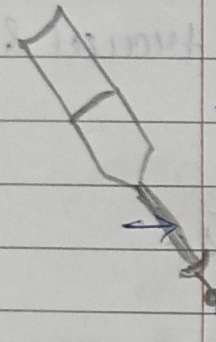


# CRUTCHES

- They are used to improve balance & to <sup>relieve</sup> weight bearing fully or partially.
- They are used bilaterally & function to increase base of support, to improve lateral stability & to allow the upper extremity to transfer body weight to the follow.

## Type of Crutches -

- i) **Axillary Crutches** - They are also referred as standard crutches. They are made up of light weighted wood or aluminium parts they includes axillary bar / axillary pad.



- A hand piece and double a upright joint designed by a single leg covered with rubber tip.
- Push <sup>button</sup> pin or notch mechanism for height adjustment.

## Measurement of axillary crutches -

- i) **en Standing** - Crutches should be measured from 2 inches below the axilla. (to prevent Nerve compression)

- The width of 2 fingers is used to approximate this distance.
- During measurement the distal end of the crutches should be 2 inches lateral & 6 inches anterior to the foot.



→ The crutches height can be obtain by subtracting 16 inches from the patient's height.

→ with the shoulder relaxed the hand piece should be adjusted to provide 20 to 30 degree of elbow flexion.

2. In Supine position - measurement is taken from the anterior axillary fold to a surface point, 6 to 8 inches from the lateral border of the heel.

2. Fore-arm crutches - This is also known as Lofstrand and Canadian crutches. They are made up of aluminium.

Parts - They include a single upright.  
→ Forearm cuff & a hand grip.

Measurement :- on standing the distal end of the crutches should be position to 2 inches lateral and 6 inches anterior to the foot.

→ With the shoulder relaxed the height should be adjusted to provide 20 to 30° of elbow flexion.

→ The forearm cuff should be placed on the proximal 3rd of the forearm approximately 1 to 1.5 inches below the elbow.

\* GAIT PATTERN USED TO CRUTCHES :-

1. 2 point gait - It is similar to the 4 point gait, it is less stable because only few

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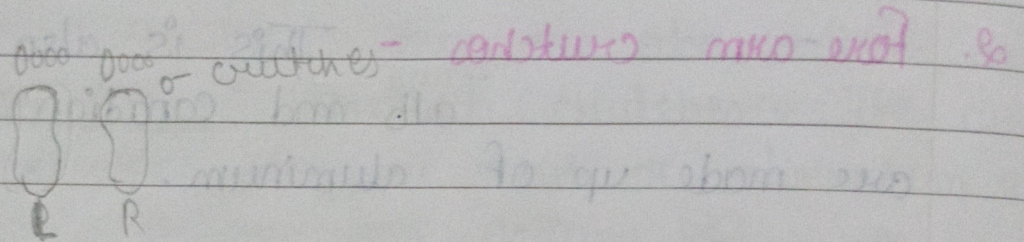


points of <sup>floor</sup> ~~low~~ contact are maintained.

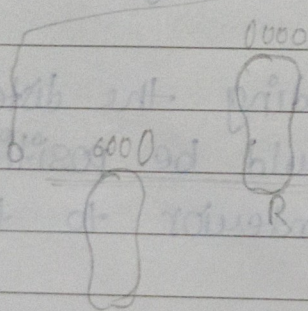
→ 2 point pattern most commonly stimulate or it is likely to normal gait pattern as the opp. lower limb & upper extremity moves together.

\* Steps of gait pattern -

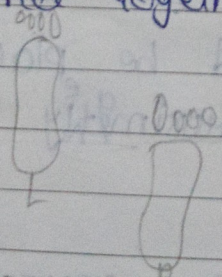
① 1. **Starting position**, weight is on both lower limbs and on both crutches



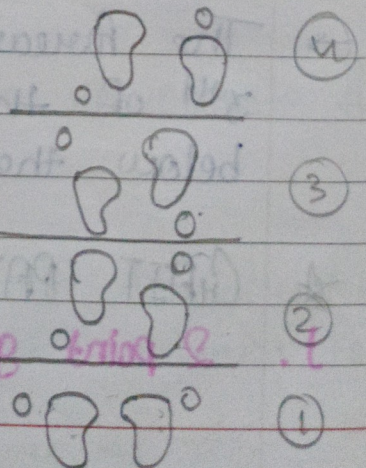
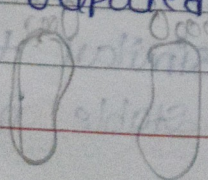
② 2. The left crutch and right lower limb are advanced together / moves.



③ 3. The right crutch & the left lower extremity are advanced together.



④ 4. Cycle is repeated.

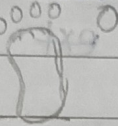




3. **3 point gait** - In this type of gait 3 points of supports contact the floor. It is used when are not weight bearing required on a one lower limb body weight is transfer on the crutches insisted of on the <sup>affected</sup> lower limb.

Steps of 3 point gait -

4. Both crutch are advanced.



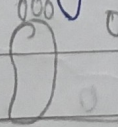
3. weight is shifted through the upper extremity on the crutches and the uninvolved limb advanced beyond the crutches.



2. weight is shifted on the uninvolved right lower extremity & the crutches are advanced.



1. Starting position - leg & crutches are some label.



\* **Partial weight bearing gait** :-

This gait is a modification of 3 point gait during forward movement of effected limb weight is transmitted partially on both crutch & on the effected limb.



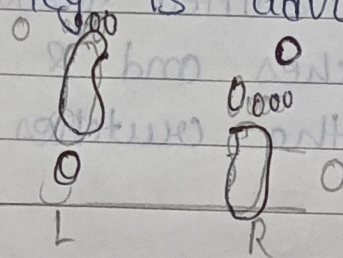
3- 4 point gait - This pattern provides a slow, stable gait as 3 point of floor contact are maintained.

→ weight is transmitted of both lower extremity & this pattern is used with bilateral involvement due to poor balance in co-ordination or muscle weakness.

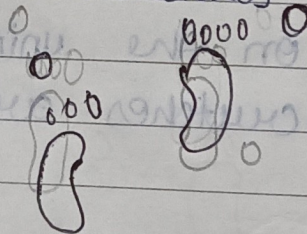
→ In this gait pattern one crutches move forward & then the opp. ext lower extremity is advanced.

\* Steps of 4 point gait -

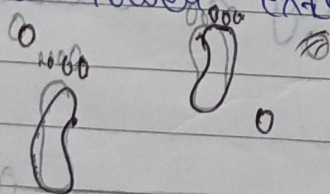
⑤ The left leg is advanced.



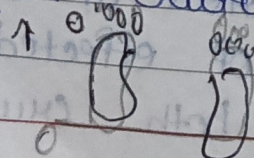
4. The right crutches is advanced.



3. The right lower extremity is advanced.

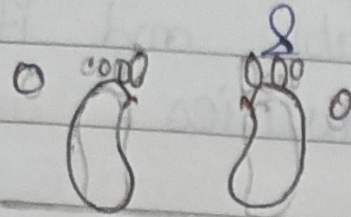


2. The left crutches is advanced.





1. Starting position - weight is on <sup>both</sup> lower extremity <sup>both</sup> crutches.



- \* ~~Swing 1~~<sup>2</sup> and Swing through gait -
- These are used when there is bilateral lower extremity involvement such as in spinal cord injury.
- The Swing 2 gait involves forward movement of both crutches together & lower extremity swing ~~too~~<sup>2</sup> the crutches.
- In Swing 2 gait the crutches are move together & the lower extremity goes beyond the crutches.